

What is claimed is:

1. A method for producing an optical arrangement,
5 comprising:

optically coupling an optical component with a waveguide;

interposing an adjustment device having an auxiliary waveguide associated therewith between the optical component and the waveguide, the auxiliary waveguide having ends, wherein at least one of the ends is movable; and

moving one of the at least one movable waveguide ends, thereby establishing a predetermined optical coupling between the optical component and the waveguide.

2. The method of claim 1, further comprising:
providing a carrier substrate; and
20 associating the optical component and the waveguide with the carrier substrate, wherein the carrier substrate comprises an electrical optical motherboard, an electrical optical circuit board, or a planar lightwave circuit.

25 3. The method of claim 2, further comprising:
providing an auxiliary substrate on or within the carrier substrate; and
providing the adjustment device having the auxiliary waveguide on or within the auxiliary substrate.

35 4. The method of claim 3, further comprising mounting the optical component on or within the auxiliary substrate.

5. The method of claim 4, further comprising forming a depression within a surface of the carrier

substrate, wherein the auxiliary substrate is mounted on or within the carrier substrate depression.

5 6. The method of claim 5, wherein the depression is dimensioned such that the auxiliary waveguide of the adjustment device and the waveguide associated with the carrier substrate lie in a single plane.

10 7. The method of claim 6, further comprising providing fixing elements within the depression between the carrier substrate and the auxiliary substrate.

15 8. The method of claim 7, wherein the fixing elements are electrically conductive and provide electrical contact between the carrier substrate and the adjustment device associated with the auxiliary substrate.

20 9. The method of claim 2, wherein the adjustment device and the carrier substrate are mounted on a separate carrier substrate.

25 10. The method of claim 1, wherein moving one of the movable waveguide ends comprises deflecting the at least one movable waveguide ends with one of electrostatic, magnetic, thermal, piezoelectric and thermomechanical forces.

30 11. The method of claim 1, wherein moving one of the movable waveguide ends comprises moving the at least one movable waveguide end in a direction perpendicular to a longitudinal direction of the auxiliary waveguide.

35 12. The method of claim 1, wherein moving one of the movable waveguide ends comprises moving the movable end in a manner to achieve a predetermined optical

attenuation between the optical component and the waveguide.

13. The method of claim 1, wherein a space exists
5 between the adjustment device and the optical component, further comprising filling the space with a composite composition having a refractive index associated with the adjustment device and the optical component.

10

14. The method of claim 1, wherein the optical component comprises a semiconductor optical laser or a semiconductor optical amplifier.

15 15. The method of claim 1, further comprising interposing a second adjustment device having an auxiliary waveguide associated therewith between the optical component and the waveguide, the auxiliary waveguide of the second adjustment device having ends,
20 wherein at least one of the ends is movable.

16. The method of claim 2, wherein the carrier substrate comprises a glass substrate, a silicon substrate or a silicon-on-insulator (SOI) substrate,
25 and wherein the waveguide associated with the carrier substrate comprises a glass waveguide or a polymer waveguide.

17. The method of claim 1, further comprising
30 adapting a mode field of the waveguide or the optical component with a mode field of the auxiliary waveguide.

18. The method of claim 1, further comprising
35 fixing the at least one movable end of the auxiliary waveguide after establishing the predetermined optical coupling.

19. An optical system, comprising:

an optical component in optical communication with a waveguide; and

an adjustment device interposed between the optical component and the waveguide, the adjustment
5 device comprising an auxiliary waveguide having ends, wherein at least one of the ends is movable to facilitate a predetermined optical coupling between the optical component and the waveguide.

10 20. The optical system of claim 19, wherein the waveguide resides on or within a carrier substrate, and forms an electrical optical carrier system, wherein the carrier substrate comprises an electrical optical motherboard, an electrical optical circuit board, or a
15 planar lightwave circuit.

21. The optical system of claim 19, wherein the adjustment device comprising the auxiliary waveguide is formed on or within an auxiliary substrate.
20

22. The optical system of claim 20, wherein the optical component is mounted on the adjustment device that is connected to the carrier substrate.

25 23. The optical system of claim 22, wherein the adjustment device is placed on or within a depression on a surface of the carrier substrate.

24. The optical system of claim 23, wherein the
30 depression is dimensioned such that the auxiliary waveguide of the adjustment device and the waveguide of the carrier substrate are coplanar.

25. The optical system of claim 23, further
35 comprising fixing elements in the depression between the adjustment device and the carrier substrate.

26. The optical system of claim 25, wherein the fixing elements are electrically conductive and provide electrical contact between the adjustment device and the carrier substrate.

5

27. The optical system of claim 19, wherein the adjustment device and the carrier substrate are mounted on a separate carrier substrate.

10

28. The optical system of claim 19, wherein the at least one movable end of the auxiliary waveguide is operable to be deflected and adjusted by an electrostatic, magnetic, thermal, piezoelectric or thermomechanical force.

15

29. The optical system of claim 19, wherein the at least one movable end of the auxiliary waveguide is operable to move in a direction generally perpendicular to a longitudinal direction of the auxiliary waveguide.

20

30. The optical system of claim 19, wherein at least one of the ends of the auxiliary waveguide is moved to establish a predetermined optical attenuation between the optical component and the waveguide.

25

31. The optical system of claim 19, wherein the optical component and the adjustment device define a space therebetween, and wherein the space is filled with a composite composition having a refractive index associated with the optical component and the adjustment device.

30

32. The optical system of claim 19, wherein the optical component comprises an optical laser amplifier mounted to a carrier substrate.

35

33. The optical system of claim 19, wherein the adjustment device further comprises a second auxiliary

waveguide having ends, wherein at least one of the ends is movable.

34. The optical waveguide system of claim 20,
5 wherein the carrier substrate comprises a glass substrate, a silicon substrate, or a silicon-on-insulator (SOI) substrate, and the waveguide comprises a glass waveguide or a polymer waveguide.

10 35. The optical system of claim 19, wherein a mode field of the auxiliary waveguide is adapted to a mode field of the optical component or the waveguide.

15 36. The optical system of claim 19, further comprising a holding component operable to fix the one or more movable ends of the auxiliary waveguide upon establishing the predetermined optical coupling between the optical component and the waveguide.

20

25

30